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Secular stagnation and its existence in the euro area post-financial crisis

Bachelor's thesis

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Abstract

This literature review discusses the possibility of the euro area facing a secular stagnation condition – a long-term stagnation of economic growth and a decline of the natural rate of interest. Discussions of the secular stagnation have arisen after the financial crisis shook the global economy. I focus on defining the term "secular stagnation" and studying the reasons behind it, and justify my observations with an Overlapping Generations model and its application by Eggertsson, Mehrotra and Robbins (2019). I show how all the main forces behind a secular stagnation hypothesis (a decrease in population growth, a fall in productivity growth and an increase in inequality) have somewhat realised in the euro area during the past 50 years. Therefore, it is justified to conclude that the euro area can be facing a secular stagnation condition and that this condition might a "new normal". This observation is consistent with many economists' current arguments.

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1. Introduction

In the aftermath of the financial crisis of 2008-2009 and the European debt crisis of 2012, there has been a continuous debate about whether the developed economies have survived the crises unhurt. Some might argue that the world has recovered well with the help of unusual monetary policies, which can now be left behind as the employment percentages are highest in a decade, wages are rising, and the governments' debt-to-GDP ratios are shrinking (The Bank of Finland, 2019). The Fed has increased its interest rates after the period of near-zero rates, and the US economy seems to be finally heading towards a healthier state, followed by the rest of the industrial world. This optimism is justified, certainly, if recent statistics, strong stock markets and the end of fiscal contraction are to be believed. How could anyone be afraid of the economy to stop growing? Is the economic growth not a law of nature, happening in the long term regardless of the policy actions or any kind of crises?

Yes, the great news in the past few years and the optimistic forecasts of US and European economies are true and should be celebrated. The developed economies have achieved great victories after tough years of recession and debt crisis. However, these victories have been achieved through very extraordinary monetary policy, which has never been seen in history before. Central banks' policy rates have been near-zero and below for many years and the monetary easing programs have been widely implemented. Yes, in these conditions of ultra-low interest rates and monetary easing, the economy should be blooming. Thanks to the monetary policy implementations, the employment and growth rates are finally ascending to their pre-crisis levels. However, there is no evidence that this economic growth would be sustainable under normal real interest rates. The European Central Bank has not increased its interest rates since 2011, and the Fed's rates are nowhere near the pre-crisis level. We have thus lived this period of unusual monetary policy for quite some time now and seen only temporary positive shocks. It seems like the healthier economic situation could not last anymore even though the central banks and states do everything in their power. We are, indeed, seeing very normal economic growth in very abnormal policy and financial conditions (Summers, 2018).

The Fed had optimistic outlook last year, and it cautiously increased its interest rates (Federal Reserve, 2018), but declared once again this July that it will lower them to support the economic growth (Federal Reserve, 2019a). The situation is no different in the euro area: in June, the European Central Bank announced that it will keep its interest rates unchanged at least through the first half of 2020 to govern the inflation towards close to 2 per cent target (European Central Bank, 2019). As Fed's chairman Jerome Powell said in his press conference in June 2019, "weaker global growth may continue to hold inflation down around the world" (Federal Reserve, 2019b), and even the

unconventional monetary policy measures don't seem to ease the situation in any time near. That is why we cannot ignore the possibility of the world facing a persistent, long-term condition of no economic growth, which is not caused by single events or short-term shocks. That is why we cannot help but wonder if there really is an economic condition called secular stagnation.

Secular stagnation has been widely studied over the past years. Especially since Lawrence Summers wrote his pivotal column in 2013, economists and journalists have been very interested in this topic. Eggertsson and Mehrotra introduced their model of secular stagnation in 2014, and Eggertsson, Mehrotra and Robbins complemented it in 2019 with a quantitative analysis. VoxEu published a collection of papers, *Secular Stagnation: Facts, Causes and Cures*, in 2014, which included papers from e.g. Paul Krugman and Lawrence Summers. Interest on secular stagnation has only increased during the past two or three years as the public has started to realize that this condition might be in our future. For example, the Federal Reserve, the European Central Bank and the Bank of Finland have published many articles regarding an economic area facing secular stagnation, but there are only few studies considering specifically the euro area (e.g. The Bank of Finland, 2018).

In this literature review, I examine the possibility of the euro area facing a secular stagnation condition. I start by defining the term secular stagnation, using articles and papers by Lawrence Summers and Alvin Hansen as my main sources. Next, I introduce the overlapping generations model of secular stagnation by Eggertsson, Mehrotra and Robbins (2019), which interprets how the situation of low interest rates is formed and what are the reasons behind it. Last, based on these results of the model and articles by various economists, I discuss whether the euro area might be suffering from secular stagnation condition. I also present some suggestions on what can be done to prevent the situation from worsening. Aim of this thesis is to justify why secular stagnation would be true in the euro area, basing my arguments on existing studies and data from the euro area economy. Based on this evidence, my conclusion is that the euro area might really be facing a secular stagnation condition. After examining the data from the euro area, it seems clear that the main characteristics of secular stagnation exist in the monetary union. However, I will not be providing an exhaustive answer to this question, as secular stagnation is not a measurable phenomenon, and it is still controversial, whether such term even exists. Also, I will not take a stand on monetary or fiscal policy, as this thesis is only meant to be ponderous.

2. Defining secular stagnation

There is no consensus among economists that such term as secular stagnation exists in the first place. However, the most common definition for the term is "a prolonged period of no economic growth in which satisfactory growth can only be achieved through unsustainable financial conditions" (Eggertsson et al., 2019) – unsustainable conditions referring to current unconventional monetary policy measures, e.g. zero-to-negative interest rates. In a secular stagnation steady state, the natural real interest rate, the rate at which the employment and GDP are at their full potential, is permanently negative, inflation is persistently below target and output falls below trend. (Eggertsson et al., 2019).

A natural real rate of interest exists in the equilibrium of supply and demand of loans, i.e. in the equilibrium of saving and investment. A demand-side perspective of the secular stagnation proposes that there is a persistent oversupply of savings that push down the natural real rate of interest. In other words, there is a chronic shortage of aggregate demand which constraints economic growth.

Interest rates may even slide into negative territory, causing low economic growth and low inflation. According to normal New Keynesian theory, lower interest rates should increase loan demand and boost investments. With or without policy interventions, the economy should eventually restore itself to full employment and optimal output equilibrium. However, in the secular stagnation hypothesis, the aggregate demand is permanently lacking due to several chronic issues I will later discuss. Opposite to the popular theories, the secular stagnation hypothesis suggests that it might be impossible for the economy to recover under conventional monetary policy conditions.

2.1. Secular stagnation according to Alvin Hansen and Lawrence Summers

The term secular stagnation was originally introduced by Alvin Hansen, a Keynesian economist, in 1939 after the Great Depression had hit the United States. As formalized by Eggertsson and Mehrotra (2014, p. 1), Hansen suggested that "the Great Depression might be the start of a new era of ongoing unemployment and economic stagnation" without any natural forces pushing the economy towards a healthier situation. As driving forces behind a secular stagnation condition, Hansen suggested fundamental factors, such as a decline in the birth rate, ageing population, a decline in productivity growth and increasing income inequality. All of these factors create an oversupply of savings, which leads to insufficient aggregate demand. (Eggertsson et al., 2019).

Speculations about secular stagnation rose again almost 80 years after Hansen first introduced the term when Lawrence Summers reassessed it in 2013 in his column "Why stagnation might prove to

be the new normal" (Financial Times, 2013). Summers argued that the secular stagnation could be considered as a hypothesis that the natural rate of interest – the equilibrium of real interest rates when output is at its potential – is permanently negative (Eggertsson et al., 2019). Summers was one of the first economists to highlight the defining meaning of real interest rate decline in the secular stagnation hypothesis. As I will later explain, defining secular stagnation condition eventually comes down to the level of real interest rate, which is defined through supply and demand of loans.

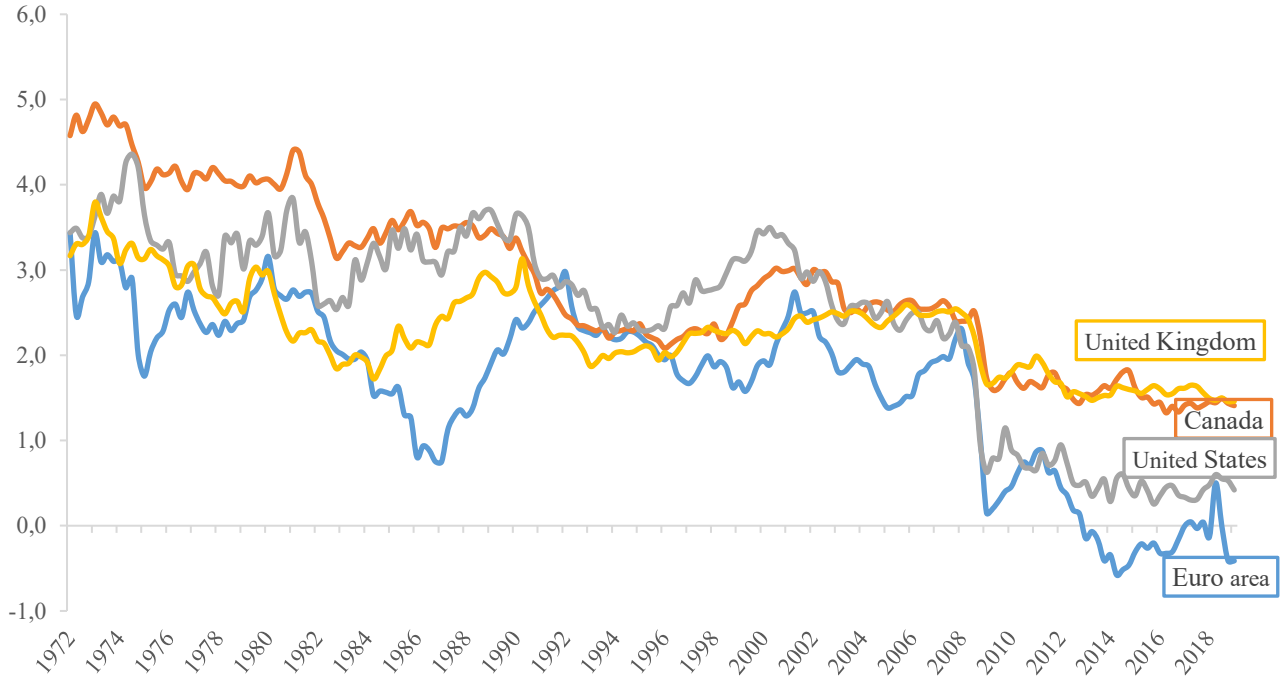
2.2. Modern secular stagnation

In 1939, Alvin Hansen raised a worry of a new era of permanently lacking economic growth. Fortunately, back then, Hansen's fears turned out to be unwarranted, since the World War II in the 1940's increased government spending massively. The following baby boom changed the population dynamics, easing the economic situation further, and the idea of secular stagnation was forgotten for decades. (Eggertsson et al., 2019).

Hansen's idea gained renewed interest almost 80 years later, after Japanese two-decade-long malaise and the long-lasting period of slow economic growth in the US and the euro area. These periods share many features with the Great Depression in the US, such as decreasing population growth and near-zero levels of central banks' interest rates, and thus they can be compared to the situation Alvin Hansen described in 1939. Lawrence Summers (2013) was considering that the US economy might be suffering from a persistent condition of no economic growth, against which the economy should prepare to insure. He raised a prospect that the 2008-2009 crisis might have ushered in the beginning of secular stagnation, the same way that Alvin Hansen assessed in 1939. (Eggertsson & Mehrotra, 2014).

Although Summers declared that the crisis of 2009 would be the start of secular stagnation, the interest rate decline had started already well before that. According to Eggertsson, Mehrotra and Robbins (2019), the western economies had faced a 25-year long trend of declining rates (Figure 1), but it wasn't until Summers' proposition that people started paying attention to it. As the Figure 1 shows, the natural real interest rate has been declining all over the industrial world already since the 1980s, falling rapidly in the aftermath of the global financial crisis and being near-zero or even negative today.

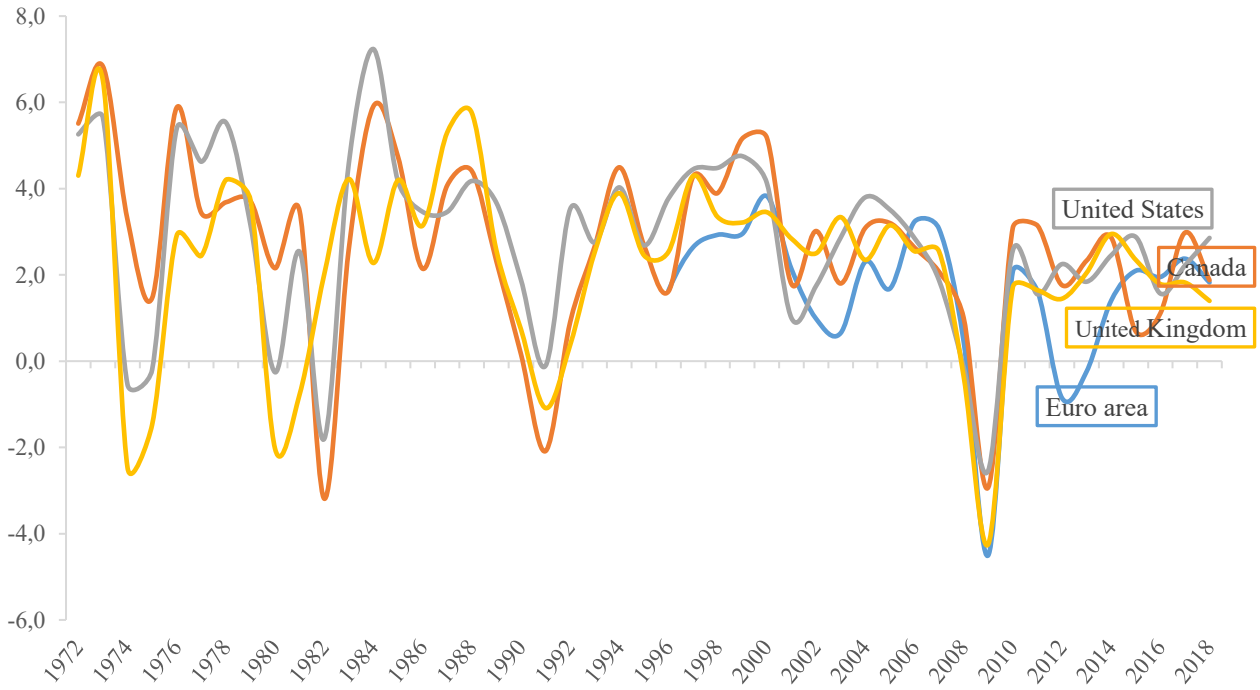
Figure 1: Natural real rate of interest



Source: Holston, K., Laubach, T., & Williams, J. C. (2017). Measuring the natural rate of interest: International trends and determinants. Journal of International Economics, 108, S59-S75.

Speaking of economic growth, the advanced economies have been growing ever since the financial crisis, except for the 2012 slump in the euro area caused by the debt crisis. However, as Figure 2 shows, the GDP growth rate has come down from around 6 per cent to less than 2 per cent in less than 50 years. Economic cycles have of course always affected the growth rate, as can be seen from the figure, but it does not rule out the fact that the trendline is directed downwards. The euro area, specifically, has faced a radical decline in the growth rate since 2009 and has not been able to recover from the crisis as other industrial countries (Summers, 2013). Since then, the euro area has had good years as well, but nevertheless, the growth seems somewhat stagnant, if not even declining, in every economic region.

Figure 2: GDP growth (annual percentage)



Source: OECD (2019): Gross domestic product (GDP): GDP, volume – annual growth rates in percentage

Objectors claim that we are just heading towards another recession, which is a part of normal economic cycles. The global economy has seen numerous recessions, depressions and also bubbles and overheatings, from which it has always recovered well. Some might argue that before the 2008-2009 financial crisis the economy was on a healthy track, growing with satisfactory rate and under modest inflation. There had even been great upswings like the 2001 stock market bubble, which was characterised by strong economic performance and full employment, but no overheating. To explain this outwardly good-looking pattern, Summers argued that the overheating was avoided due to the already existing decline in the equilibrium interest rate. According to Summers, a chronic problem had arisen without anyone noticing (Gimdal & Karakas, 2016).

2.3. Reasons behind secular stagnation

What are the factors that cause the natural rate of interest to be permanently negative? At first, there has to be some reason that pushes the rates towards near-zero levels in the first place. This reason can be found through another main property of secular stagnation: a decrease, or even a stagnation, in economic growth. As I will later interpret with an overlapping generations model by Eggertsson,

Mehrotra and Robbins (2019), these two are strongly associated. Therefore, we might as well ask another, slightly easier question: what are the reasons behind sluggish economic growth?

2.3.1. A slowdown in population growth

According to Alvin Hansen (1939), the main reason behind the sluggish economic growth is diminishing population growth. The decrease in global population growth in the 21st century consists of decreasing fertility rates, growing population of old and increasing longevity.

As fertility rates drop, the ageing population would lead to a decrease in private investments, as the elderly people invest in services rather than in, for example, real estate or technology equipment. This, in turn, leads to slower long-term economic growth and increasing unemployment, as investments in services require fewer resources that investments in real estate business (Eggertsson, et al., 2019). Also, if the fertility rate is decreasing, there are fewer workers to hire, which means fewer investments by the firms (The Economist, 2015).

As the population grows older, savings in the economy increase. The young tend to be big borrowers rather than savers since they don't generate much income and expect their future income to grow so that it covers their current debt-taking. The older the population is, the less there is demand for loans. Also, older people usually consume less than younger in general, which decreases demand even more. (Eggertsson, et al., 2019).

Increasing longevity lowers the consumption of the young and middle-aged since they prepare for longer and more uncertain retirement by saving. Increased private savings, in turn, imply a decrease in bequests parents leave for their children, which causes physical capital accumulation slowdown (Kunze, 2014). Therefore, the ageing change in demographics – especially in rich countries, where the fertility rate has had a declining trend – is the baseline reason for the slowdown in economic growth.

2.3.2. New technology and a fall in productivity growth

Another factor decreasing the investments is proposed to be the new technology. As technology develops, it leads to lower prices of capital goods and efficiency, which means that new investments require less capital. Today's large technology firms, such as Google or Facebook, can grow infinitely on very little capital, and new, significant ventures like them require much less capital to start than

they used to (Summers, 2014a). Also, they have resources to move their production to countries with cheaper labour cost (Helsingin Sanomat, 2019). Globalization and increased competition push wages down, which slows down the inflation growth. Furthermore, in the past few decades, the world has not seen significant innovations, such as electricity or combustion engines, which had a huge impact on productivity and economic growth in history. Computers and the Internet may never have the same kind of impact on the global economy (Eichengreen, 2015). As Lawrence Summers put it, "the modern business requires less capital to function" (Wessel & Olson, 2015).

Summers added the slowdown in productivity growth to the table, and a British economist Tim Jackson (2019) argued that labour productivity growth compared to the GDP per capita growth has declined. Mathematically, if the GDP per capita equals the labour productivity multiplied by workforce participation and the average number of hours worked, then, keeping the multipliers constant, the GDP per capita growth rate should always be equal to the labour productivity growth rate. However, the difference between these two is widening. This means that either the workforce participation or the average number of hours worked are increasing in the economy. Jackson claimed that in fact, both of these two things have happened during the last half a century. Before the Great Recession, work participation rates increased, allowing the GDP per capita rates to decline more slowly than labour productivity growth. After the Recession, the average hours worked have been increasing globally, which for one's part decreases the labour productivity growth even more. This assumption might be contradictory with technology increasing productivity, but it is rational to say that modern technology might never achieve the same levels of productivity growth that, for example, oil or other fossil fuel technologies created. Also, a decrease in productivity growth decreases households' income prospects, which once again increases saving in the economy (Eggertsson et al., 2019).

2.3.3. Rising inequality

The fourth reason behind the secular stagnation condition is rising inequality, especially in the developed industrial countries. As an increasing share of income is held by the wealthiest with low marginal propensity to consume, the consumption diminishes (Summers, 2013): higher-income households tend to have higher saving rates than low- and middle-income households. Hence, the rise in the income inequality creates a shortfall in the aggregate demand. In normal economic condition, lacking consumer spending is offset by increased investment, since higher savings put downward pressure on interest rates. However, in secular stagnation condition where the interest rates have fallen

to ultra-low levels, the zero lower bound might be blocking higher investment spending (Bivens, 2017).

3. Zero Lower Bound

Interest rates have been low before, only to rise again along with economic cycles. How is it that this time they might not rise again? Lawrence Summers declared this through interest rate flexibility. In a normal economic situation, as a negative shock takes place, private savings increase, and investments decline. Either market forces or policy actions make the interest rates fall to equate the full employment equilibrium of savings and investments, the equilibrium at which output is at its potential and inflation is stable. In other words, any change in savings or investments affect the real interest rate, but not output or employment. However, this requires that interest rates are fully flexible and can be anything below or above zero. In modern economies, the interest rates cannot fall below zero because of a zero lower bound (ZLB), a situation where lowering rates would not encourage spending, but instead, it only makes people hold cash. Therefore, central banks can no longer stimulate the economy via interest rate policies, and the interest rates might not be low enough to meet the saving and investment equilibrium at the full employment level of output. Ordinary monetary policy measures are no more feasible, and the secular stagnation condition continues. (Summers, 2014b).

Even if the zero lower bound is not binding, low interest rates would create financial stability problems, as they increase risk taking and promote irresponsible lending. This is something like what happened before the financial crisis. Therefore, as the real interest rates have had a declining trend for a longer period now (Figure 1), it might not be possible to lower them further. In practice, as Lawrence Summers once said, the atmosphere of zero or even negative interest rates might indeed be the ‘new normal’. (Summers, 2013).

All the above reasons eventually come to the equilibrium of saving and investment in the economy. Ageing population pulls savings up, whereas slow productivity growth and rising inequality affect the investments negatively. As they both change this way, they bring the natural rate of interest lower. However, as historical evidence has shown, these are only a few of the many possible factors that put downward pressure on the interest rates: generally, any force that affects the supply of savings and investment can have an effect on interest rates, many of which are too complicated to go through in this thesis. Therefore, Eggertson, Mehrotra and Robbins (2019) illustrated via an overlapping

generation (OLG) model, how these main forces – a slowdown in population growth, a fall in the relative price of investment goods, a slowdown in productivity growth and rising income inequality – play an important role in the secular stagnation hypothesis.

4. The Overlapping Generations model

4.1. Introduction to the model

As with most economic equilibriums, the real interest rate equilibrium is also determined in the intersection of supply and demand. In the case of interest rates, the equilibrium is formed by the supply and demand for loans, i.e. savings and investments in the economy. Of course, this is the simplest way to illustrate this situation, since the real interest rate, like the output gap, for example, cannot be observed directly.

Eggertsson, Mehrotra and Robbins (2019) formalize Summers' idea of permanently negative real interest rates with a simple overlapping generation (OLG) model. In the next chapter, I will introduce the simple version of the model. The OLG model was first introduced by Maurice Allais in 1947 and it has later been widely cited in economics literature. The simple OLG model applied into secular stagnation hypothesis illustrates the reasons behind the low natural rate of interest and a secular stagnation condition, and how the rates might need on average to maintain negative to achieve full employment. Thus, the model illustrates the "new normal", a world in which the real interest rates are permanently negative.

The model includes three generations: the young, the middle-aged and the old. Households live for these three periods and die after period 3 (old). No aggregate saving is feasible (that is, there is no physical capital), but these generations can borrow from one another. Moreover, only middle-aged and old generations can generate income Y_t^m and Y_t^o. The young cannot work, i.e. they will borrow from the middle-aged but can't generate income themselves. The middle-aged, in turn, will save for the retirement, when they will fully consume any income they have generated, borrowed or saved. For simplicity, the model assumes that there is a constraint for the amount the young can borrow, which will be in the form of an exogenous time-varying constant D_t.

4.2. The model

A household is born at time *t*. Consider that this household maximizes the following utility function:

$$\max_{C_t^y,\, C_{t+1}^m, C_{t+2}^o} E\{\log\left(C_t^y\right) + \beta \log(C_{t+1}^m) + \beta^2 \log\left(C_{t+2}^o\right)\},$$

where C_t^y is the consumption of the household when young, C_{t+1}^m is the consumption of the household when middle-aged, and C_{t+2}^o is its consumption when old. Assume that all the lending and borrowing happen via riskless bonds denoted as B_t^i, where $i = y, m, o$ at an interest rate r_t. Given these assumptions, the household faces the following budget constraints at each period:

(1) $$C_t^y = B_t^y,$$

(2) $$C_{t+1}^m = Y_{t+1}^m - (1 + r_t)B_t^y + B_{t+1}^m,$$

(3) $$C_{t+2}^o = Y_{t+2}^o - (1 + r_{t+1})B_{t+1}^m,$$

(4) $$(1 + r_t)B_t^i \leq D_t,$$

where equation (1) is the budget constraint for the young, where the consumption is fully financed by borrowing. Equation (2) is the budget constraint for the middle-aged, where income Y_t^m is received, borrowings are repaid, and new assets B_{t+1}^m are borrowed. Thus, the middle-aged save $-B_{t+1}^m$ for retirement. Equation (3) is the budget constraint for when the household is old, consuming savings, interest, and everything that is left from the previous periods. The last equation (4) is the inequality equation, which corresponds to the exogenous borrowing limit we earlier referred to:

(5) $$C_t^y = B_t^y = \frac{D_t}{1+r_t}.$$

The equation (5) implies that the young can only borrow the amount of debt they are able to repay in the middle period, and therefore, it includes interest payments. Thus, a decline in the real interest rate r_t increases the borrowing by the young.

The middle-aged are at an interior solution, and their consumption-saving choices satisfy the standard Euler equation

(6) $$\frac{1}{C_t^m} = \beta E_t \frac{1+r_t}{C_{t+1}^o}.$$

Finally, the old will consume their income:

$$C_t^o = Y_t^o - (1 + r_{t-1})B_{t-1}^m. \quad (7)$$

If the generation growth rate is defined by $\frac{N_t}{N_{t-1}} = 1 + g_t$, and if the borrowing of the young equals the savings of the middle-aged – the equilibrium is formed in the bond market – then the equation is as follows:

$$(1 + g_t)B_t^y = -B_t^m. \quad (8)$$

The savings of the middle-aged correspond to the loan supply in the economy, which therefore forms the borrowing constraint for the young.

Next, the model analyses the equilibrium determination using the market equilibrium for savings and loans given by equation (6). Here, we use notations L_t^d for investments, i.e. loan demand, and L_t^s for savings, i.e. loan supply. The demand for loans has the exogenous constraint $(1 + r_t)B_t^i \leq D_t$, and it cannot exceed the savings of the middle-aged. Hence, using equation (6) and the inequality equation (5), the demand for loans can be written as

$$L_t^d = (1 + g_t)B_t^y = \frac{(1+g_t)}{1+r_t}D_t, \quad (9)$$

while the expression for loan supply can be derived as

$$L_t^s = \frac{\beta}{1+\beta}(Y_t^m - D_{t-1}) - \frac{1}{1+\beta}\frac{Y_{t+1}^o}{1+r_t} \quad (10)$$

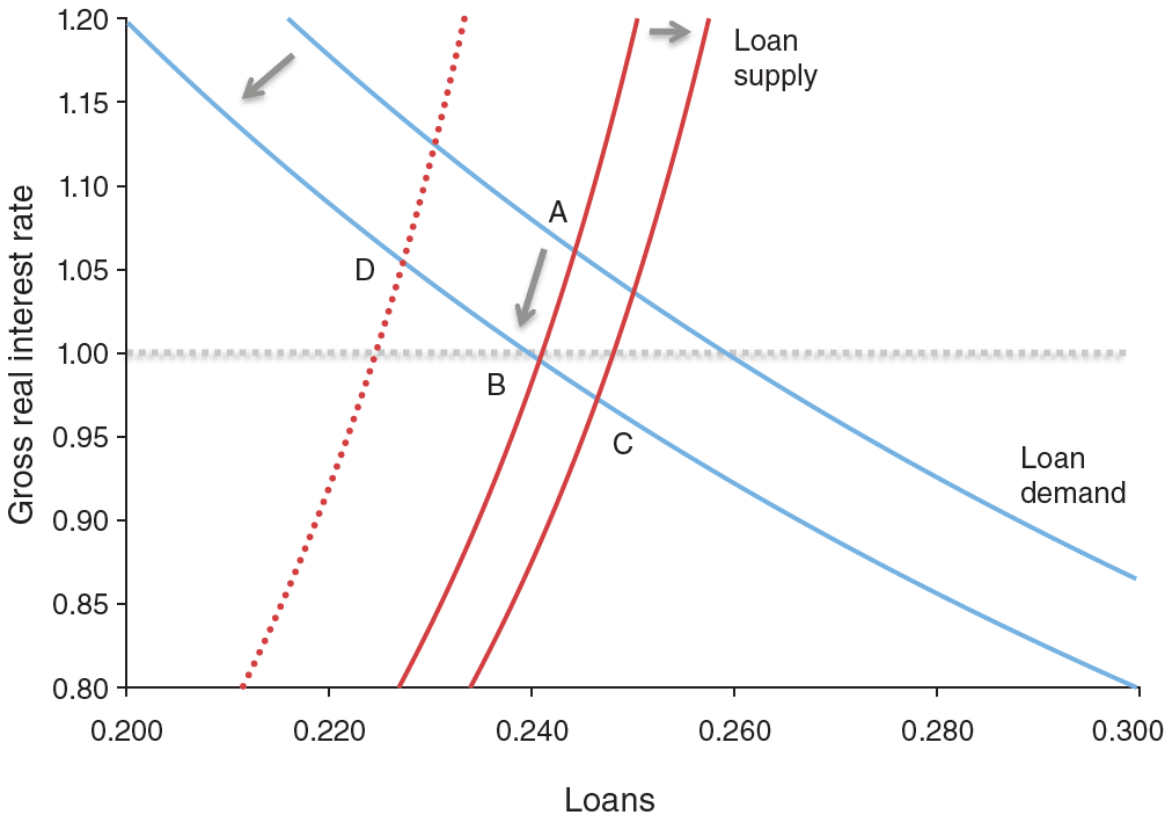
by combining the household budget constraints and the middle generation Euler equation.

As a result, the real interest rate is determined in the intersection of the loan demand L_t^d and loan supply L_t^s:

$$1 + r_t = \frac{1+\beta}{\beta}\frac{(1+g_t)D_t}{Y_t^m - D_{t-1}} + \frac{1}{\beta}\frac{Y_{t+1}^o}{Y_t^m - D_{t-1}} \quad (11)$$

described in Figure 3 below:

Figure 3: Equilibrium of loan demand and supply



Source: Eggertsson, G. B., Mehrotra, N. R., & Robbins, J. A. (2019). A model of secular stagnation: Theory and quantitative evaluation. American Economic Journal: Macroeconomics, 11(1), 1-48, p. 10.

The equation (11) shows us that the real interest rate depends, in addition to the discount factor, on income over time, debt limit and population growth. This is compatible with Hansen's and Summers' propositions to the reasons behind low interest rates.

Let us compare the model to the reasons we introduced in section 2: a slowdown in population growth, a fall in productivity growth and rising income inequality. The effect of a decline in population growth can be seen from the equation for loan demand: as the number or the young population, i.e. population growth g_t decreases, so does the demand for loans. This shifts the L_t^d curve to the left lowering the real interest rate to the equilibrium B in Figure 3.

In addition to population growth, the change in demographics also affects the real interest rate equilibrium. Decreasing mortality risk and ageing population require more savings for retirement, which shifts out the loan supply, moving the L_t^s curve to the right.

In their quantitative extension of the simple OLG model, Eggertsson et al. analyse contributions of these fundamental factors. Their examinations show that a decrease in the total fertility rate from 1970 to 2015 had a – 1.84 per cent effect on the natural rate of interest. Accordingly, a decrease in the mortality rate had a – 1.82 per cent effect on the interest rate. These factors play the largest role in the decline of the natural rate of interest together with a decrease in productivity growth, which leads to a – 1.90 per cent change in the natural rate of interest.

A fall in the productivity growth, on the other hand, leads to lower expected income in the future, which means that the middle-aged will increase their savings for retirement, shifting the L_t^s curve to the right. Moreover, if the debt limit of the young is equal to the extent to which the middle-aged can repay their debt, the more the middle-aged save, the less there is left for the young to borrow. As a result, the borrowing constraint for the young tightens, shifting the L_t^d curve backwards to the left. Now the economy is in the equilibrium C in Figure 3.

Considering rising income inequality, the loan supply-demand figure shows us how shifting income from the credit-constrained households (the borrowers) to the middle-aged (the savers) shifts the L_t^s curve to the right, lowering the real interest rate. However, this assumption requires that the wealthy save more than the deprived.

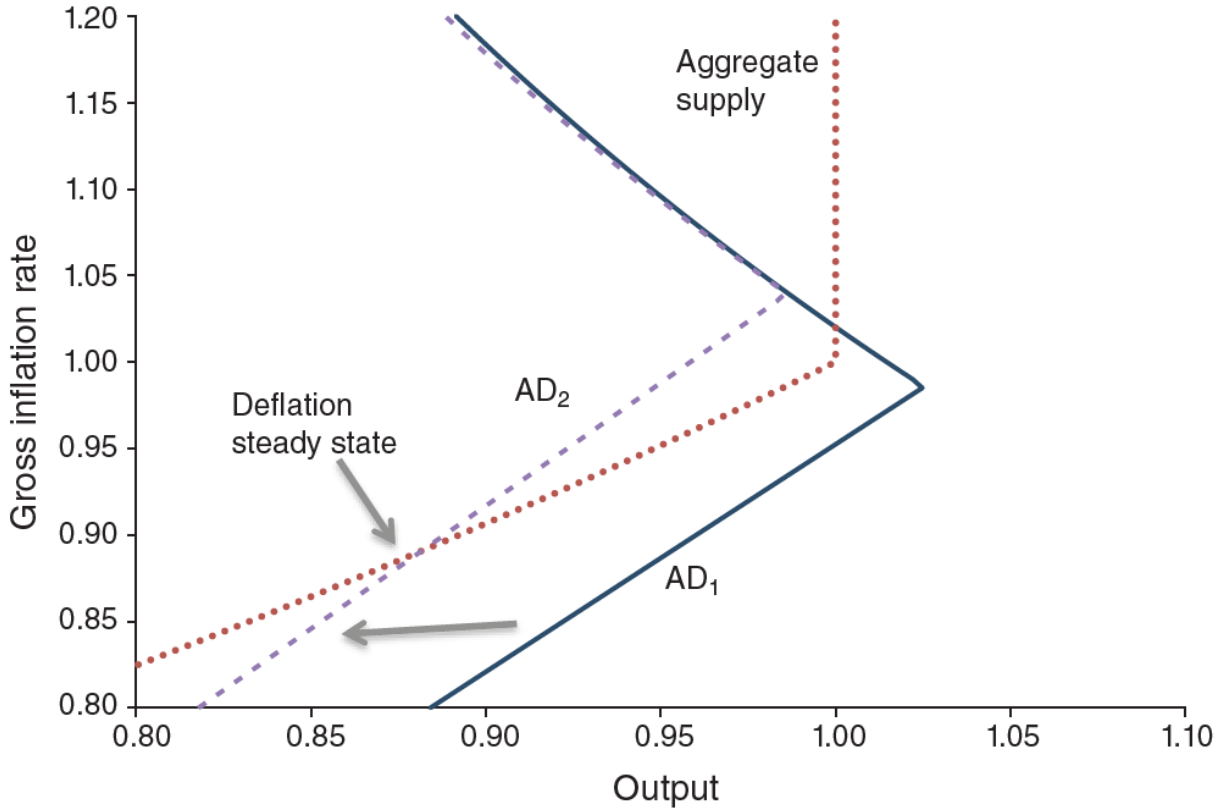
A fourth aspect often associated with the secular stagnation, to which Lawrence Summers has also referred, is a fall in the relative price of goods. As investment goods become cheaper, less capital is needed to finance a given level of investment, and the aggregate demand for investment decreases, shifting the $\mathrm{L_t^d}$ curve to the left.

The simple OLG model shows how the fundamental factors behind the secular stagnation push the real interest rate down. Next, Eggertsson, Mehrotra and Robbins explain why the output and inflation are permanently at low levels in secular stagnation steady state.

4.3. The secular stagnation steady state

After representing the simple OLG model, Eggertsson, Mehrotra and Robbins (2019) illustrate the secular stagnation equilibrium through an adaptation of long-term AD/AS model (Figure 4). Just like the simple OLG model, the AD/AS model interprets the secular stagnation equilibrium through the demand and supply of loans. The model shows the connection between the real interest rate and inflation and output. This AD/AS model adaptation interprets a situation where a deleveraging (savings increasing) shock emerges, creating an oversupply of savings.

Figure 4. Steady-state AD/AS curves *



*Axes show the shares of potential.

Source: Eggertsson, G. B., Mehrotra, N. R., & Robbins, J. A. (2019). A model of secular stagnation: Theory and quantitative evaluation. American Economic Journal: Macroeconomics, 11(1), 1-48, p. 16.

According to established economic assumptions, if inflation is permanently at very high levels, the inflation expectations automatically adjust so that optimal employment is achieved in the long run despite the level of inflation. Thus, the aggregate supply curve is vertical at high levels of inflation (the upper half of the aggregate supply curve in Figure 4). On the other hand, at lower levels of inflation, there is a trade-off between inflation and unemployment (the bottom half of the aggregate supply curve in Figure 4): according to Tobin (1972), firms tend to be reluctant to cut nominal wages despite high unemployment, which creates long-term unemployment.

After a negative shock occurs, the real interest rate falls into negative territory and inflation drops below target, and therefore the young cannot borrow as much as they used to finance their current consumption – as illustrated, the lower the real interest rate is, the less the middle-aged save and the lower the borrowing constraint D for the young is. The decrease in borrowing implies a direct fall in output since the consumption in the economy decreases (Cuerpo et al., 2013). In normal, positive real

interest rate regime, the equilibrium would be in the intersection of the aggregate supply curve and AD_1 curve, where both output and inflation are at their potential. The drop in spending would lead to a drop in the real interest rate, which in turn would restore spending back to its previous level. However, in the environment of already ultra-low real interest rate, the zero lower bound prevents this from happening, and the spending is permanently lower, shifting aggregate demand curve permanently to the left (AD_2). This equilibrium is marked as the *Deflation steady state* in Figure 4, which is also the stagnation steady state. Here, the nominal interest rate is zero, inflation even lower than before and an output gap exists.

Since the currently existing forces that are pushing the interest rates down, such as the change in demographics, are long-term rather than temporary and do not vary very fast, there are little signs of the economy recovering back to the full employment equilibrium any time soon. The AD/AS model above illustrates the exact same phenomenon as the simple OLG model: an oversupply of savings over investments pushes the real interest rate negative and leads to a stagnation steady state.

5. Secular stagnation in the euro area

To conclude whether the euro area might be suffering from secular stagnation, one must look at the development of the main characteristics of the condition. To suffer from secular stagnation, the euro area should be experiencing a longer-term decline in the natural real rate of interest, GDP growth, and inflation. Also, the reasons behind these changes should follow the results in the OLG model: saving in the economy should be increasing, while investment should be heading towards another direction. I will also go through the main forces behind this condition – a slowdown in population growth, a fall in the relative price of investment goods, a slowdown in productivity growth and rising income inequality – , how they have changed in the euro area, and are the changes significant enough to prove that there might be a possibility for a secular stagnation condition.

5.1. Japan as an epitome

Like most developed countries, the euro area hasn't been able to recover from the 2007-2008 financial crisis. Some economists say that the euro area situation resembles much the situation in Japan: since the 1990s, Japan has suffered from a long-lasting period of lacking growth and low levels of the natural rate of interest. This phenomenon is so extraordinary that it even has its own term called "Japanization". This reference is not completely imagination since the euro area does have many characteristics like Japan: ultra-low natural rate of interest, negative central bank policy rates and lacking economic growth. Also, both periods started when a financial bubble burst, and have been ongoing since. As in the euro area, in Japan, the working-age population has started to decrease, and life expectancy increase already well before the crisis. In fact, in Japan, the population growth has already seen its high and has been on a decline for seven years. According to the Eurostat, (2017), in the euro area, the peak is expected to be reached in 2045, which means that the euro area is following Japan's demographic path (Look, 2019).

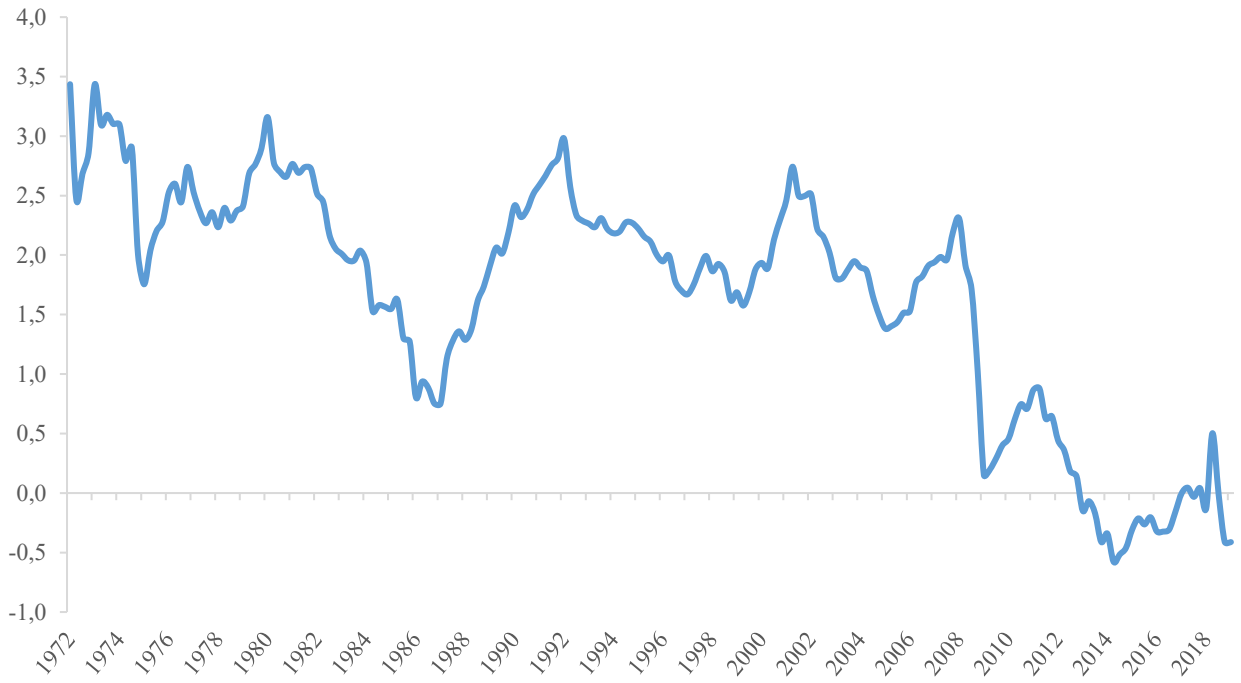
Although the patterns in these two monetary areas do seem alike, the euro area has succeeded better in a few ways. First, the ECB was quick enough to react to the economic slowdown and cut its policy rates soon after the slowdown started. Bank of Japan, on the other hand, brought its policy rates down almost five years after the slowdown had started (Ueda, 2012), and by then it was already too late: a deflation had started in the island country, which made it more difficult for the policy measures to work adequately. Second, the euro area GDP growth has remained somewhat stagnant for the past ten years, whereas in Japan the growth rates are lower and lower, being near-zero in 2018 (World Bank Group, 2019). Third, the productivity growth slowdown, which is one of the reasons behind

secular stagnation, has been worse in Japan than in the euro area. In fact, the productivity growth rate in Japan dived to the level of -1.4 % in 2018 (The Conference Board, 2019), and this is the lowest point the country has faced in ten years. Hence, although the euro area does look like Japan since the 1990s, there is no reason to be worried that the euro area would be facing the future of "Japanization". For now, the monetary union has survived moderately, and the outlook does not look as dark as in Japan.

5.2. Evidence from the euro area

The natural real rate of interest in the euro area has declined for decades, already since the 1970s (Figure 5). The most rapid decline occurred in the aftermath of the financial crisis. However, the interest rate decline is a long-term phenomenon begun well before the financial crisis, and thus the decline cannot be accused of being caused only by the crisis. The interest rate trend is perfectly in line with that of the GDP growth, which implies a longer-term chronic problem in the economy long before the crises occurred.

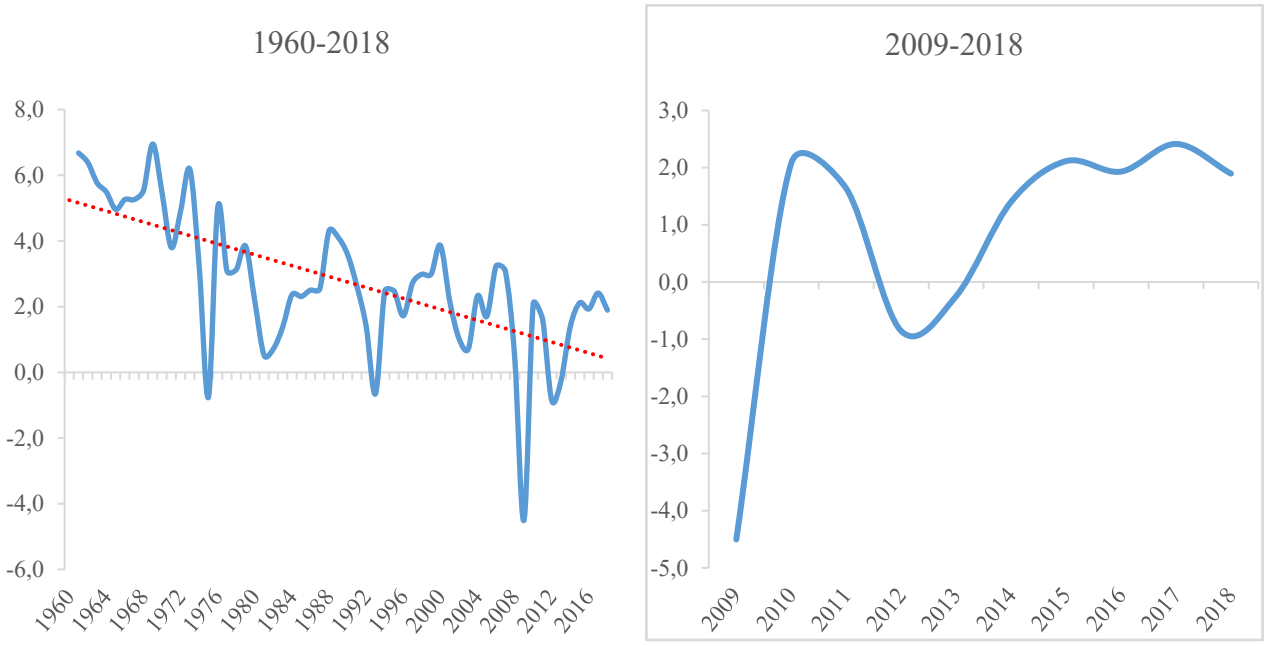
Figure 5: Euro area natural rate of interest



Source: Holston, K., Laubach, T., & Williams, J. C. (2017). Measuring the natural rate of interest: International trends and determinants. Journal of International Economics, 108, S59-S75.

The GDP per capita growth is not on its pre-crisis path either, despite the hard work and good news the public has shared in the past few years. Actually, the growth rate of the euro area's GDP per capita has declined already since the early 1970s, according to economist Leon Podkaminer (2015): the annual GDP growth rates have diminished from 5.47 % in 1970 to 1.90 % in 2018 (Figure 6), and if you look at the data even further, you can see the diminishing trend going on even from the early 1960s.

Figure 6: Euro area GDP growth (annual percentage)



Source: World Bank, World Development Indicators (2019). GDP growth (annual %).

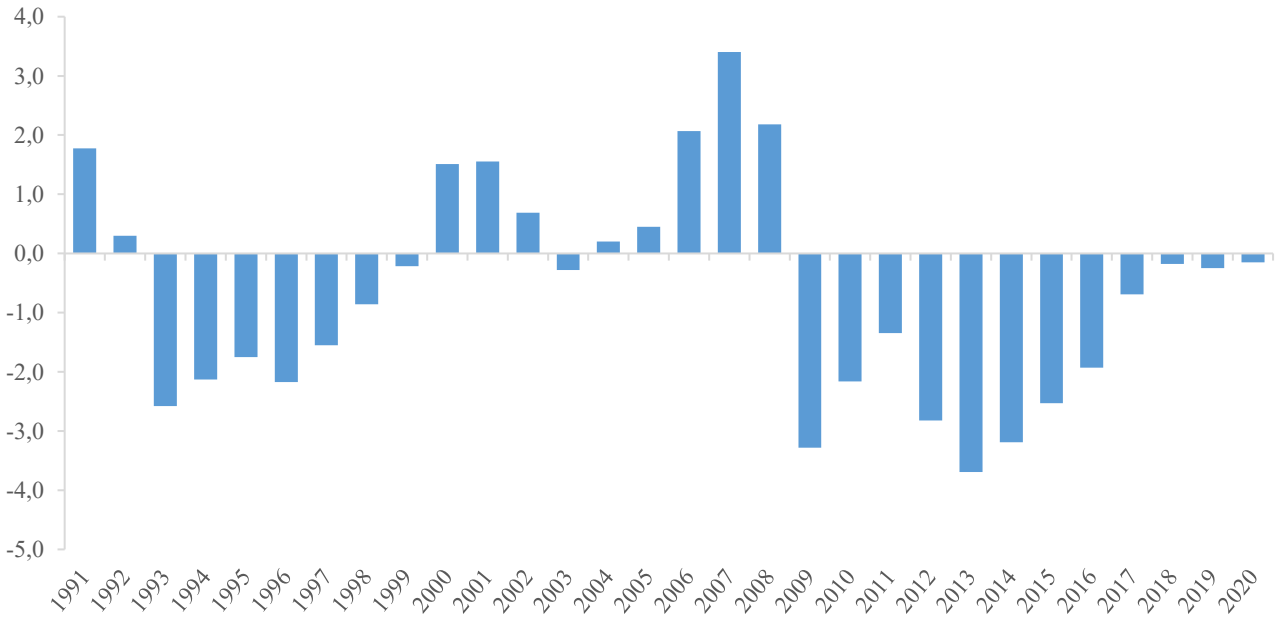
After the 2009 financial crisis, the GDP had a sharp increase before it dived again due to the debt crisis. After these crises, there has been ups and downs, but the trend seems stagnant and the projections don't seem to differ from the trend: according to the latest macroeconomic projections by the ECB (2019), the real annual GDP growth stays at 1.4 % until 2021, which is far from its pre-crisis levels.

The OEDC outlook (2019) is not any better. Economic growth in the euro area has slowed down since 2018, due to weak external demand and low business confidence. If one adds the current fear of the trade war to the equation, savings are increasing even further, and private investments are weighted down. Projections of the future growth are consistent with the ECB: GDP growth remains below 1.5 %. Private consumption increase and employment growth are expected to modestly support the

GDP growth, but even these factors are not enough to boost investments to the levels of equilibrium rate above zero. Seems like euro are GDP growth is at these 2014-2015 levels for years to come.

One of the main assumptions in the secular stagnation hypothesis is that the natural rate of interest is so low that saving and investment equilibrium does not meet at the level of full employment and potential output. However, looking at the latest data (Figure 7), it seems like the euro area is catching up the output gap, which formed after the financial crisis, and GDP is rising back to its potential. Does this mean that the euro area is recovering to its pre-crisis levels? Not quite, since the gap is only narrowing thanks to unconventional monetary policy measures and ultra-low interest rates. There is no evidence that such a trend would be sustainable under normal economic conditions. Also, short-term upswings can occur even under secular stagnation condition, since it is focused on longer term. What comes to the output gap measurement, the potential output is repeatedly corrected to correspond better to the evolution of actual GDP. 2018 potential output estimate is much closer to the actual output than the 2007 estimate. Hence, even the closure in the output gap does not imply a return to the pre-crisis path (Bank of Finland, 2018).

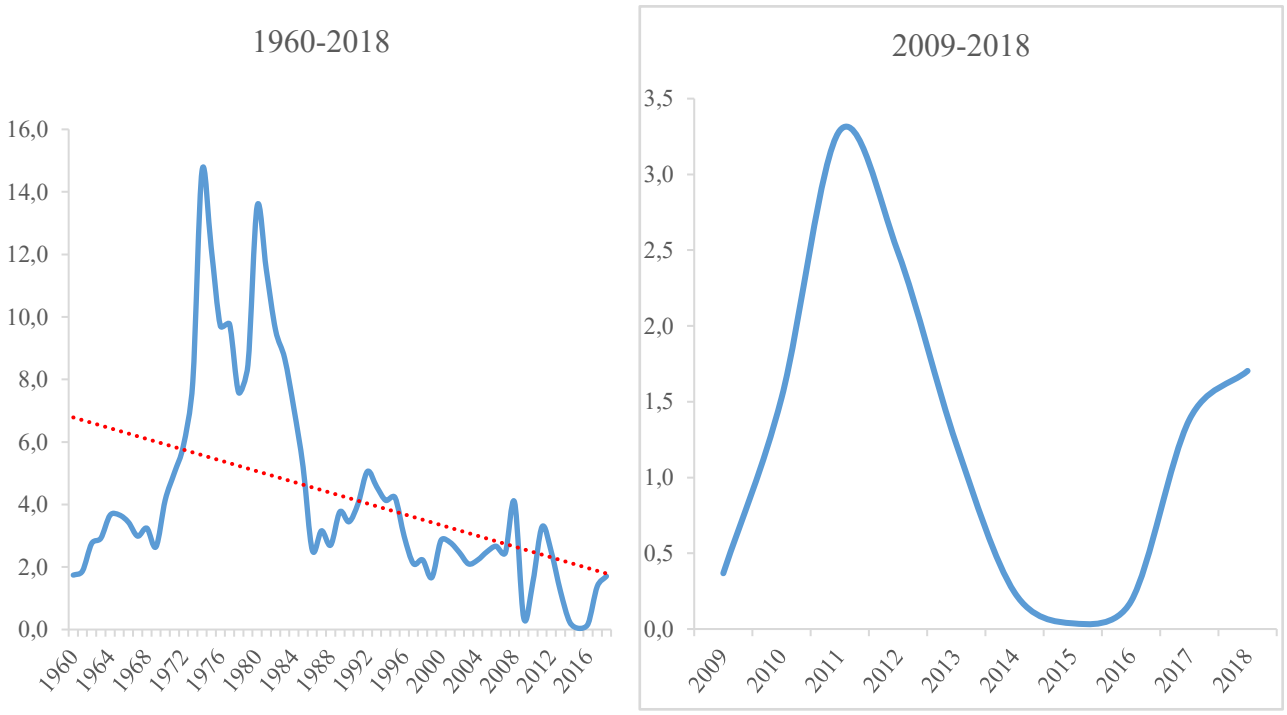
Figure 7: Euro area output gap (percentage of GDP)



Source: OECD (2018), "OECD Economic Outlook No. 104 (Edition 2018/2)"

A trend similar to the GDP growth can be seen in the inflation rates as well (Figure 8). During 1960-2018, inflation measured in the consumer price index in the euro area has declined even to zero levels in 2015, and the ECB's 2 per cent goal has been out of reach since 2012. The ECB predicts a moderate increase in the inflation rate for the next two years (1.6 % in 2021), but it still does not achieve the inflation goal level set by the central bank. Also, this announcement could be part of ECB's forward guidance policies: higher inflation expectations tend to result in higher consumption by lowering consumers' incentives to save, and therefore increase prices and eventually wages.

Figure 8: Euro area inflation (consumer prices, annual percentage)

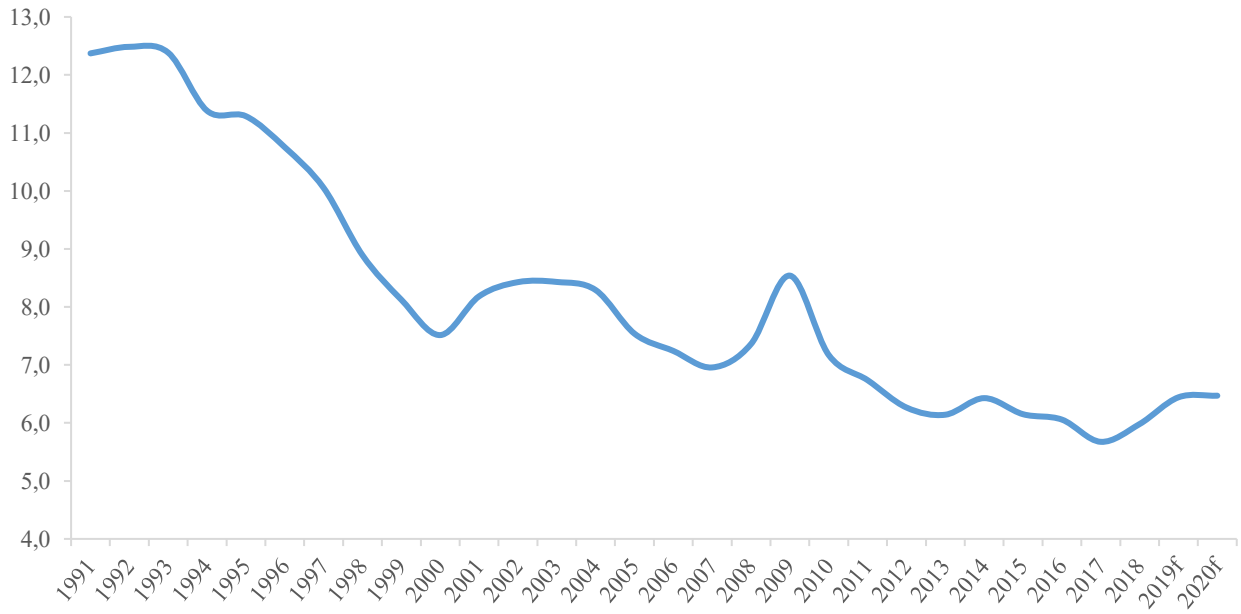


Source: World Bank, World Development Indicators (2019). Inflation, consumer prices (annual %).

After the financial crisis of 2009, the savings rate in the euro area declined rapidly (Figure 9). A fall in the income made households use their savings for food and other goods, services and paying off debt. Most people couldn't afford to save for the future, but instead, they had to live from hand to mouth. In the years after the crisis, people's trust in the economy rose, and they braved to increase their consumption, which further kept the savings rate levels moderate. However, in the past few years, uncertainty towards the economy has once again increased (European Central Bank, 2019). Under uncertain economic conditions, households will start saving for the future, as future income is no longer secure. It is also possible that households will increase saving in order to pay down debt in

the future (Badarau, Huart and Sangare, 2014). In the euro area, the increasing uncertainty can be seen as an increasing trend in the net saving ratio since 2017. Net saving ratio is calculated as disposable income minus final consumption expenditure as a percentage of GDP. Net saving is correspondent to the saving net of depreciation (OECD, 2019). The OECD forecasts the growth in the household savings to remain in the same trend at least until 2020, which, according to secular stagnation theories, implies a fall in real interest rate equilibrium.

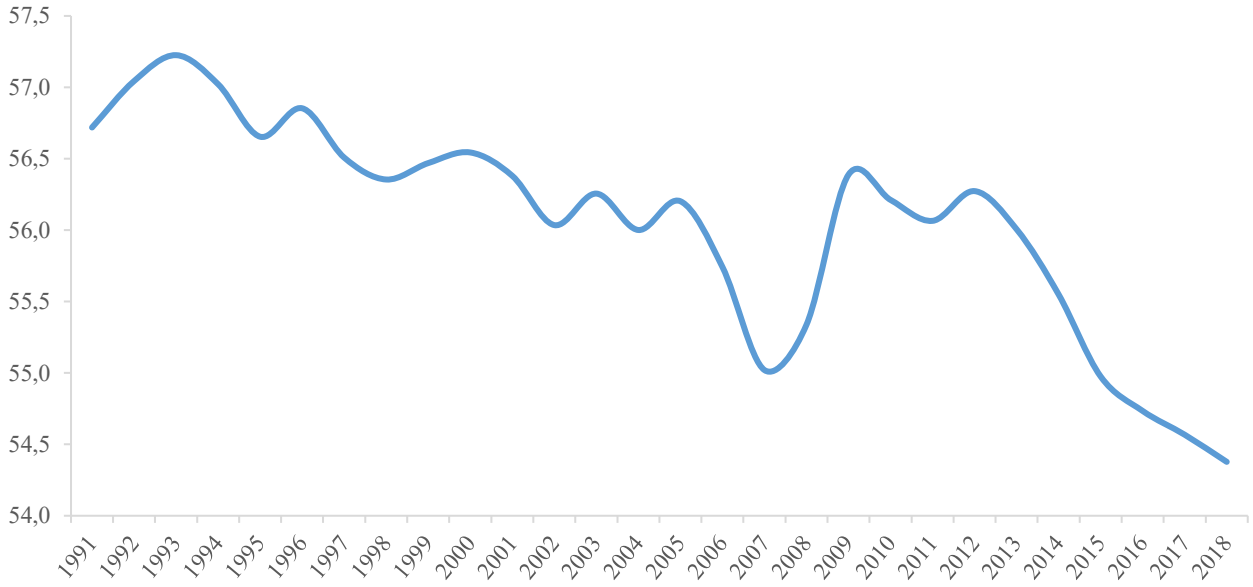
Figure 9: Euro area net saving ratio of households and non-profit institutions serving households (percentage of GDP)



Source: OECD (2019), "OECD Economic Outlook No. 105 (Edition 2019/1)"

In contrast to the net saving ratio, the household consumption expenditure has declined for decades and is now at approximately 53.4 % of GDP (Figure 10). Consumption had a rapid decline after the euro crisis in 2012, and it can be assumed that increasing uncertainty affected people's propensity to consume negatively. This observation is well in line with the saving ratio trend: as savings in the economy increase, consumption decreases, however, the shift in consumption happened much earlier. Even though consumption should follow savings in the economy, this is possible because after the financial crisis households could not afford to increase savings, but spending started to decrease immediately. Today, households are increasing their saving to prepare themselves for an uncertain future.

Figure 10: Euro area final consumption expenditure of households and non-profit institutions serving households (percentage of GDP)



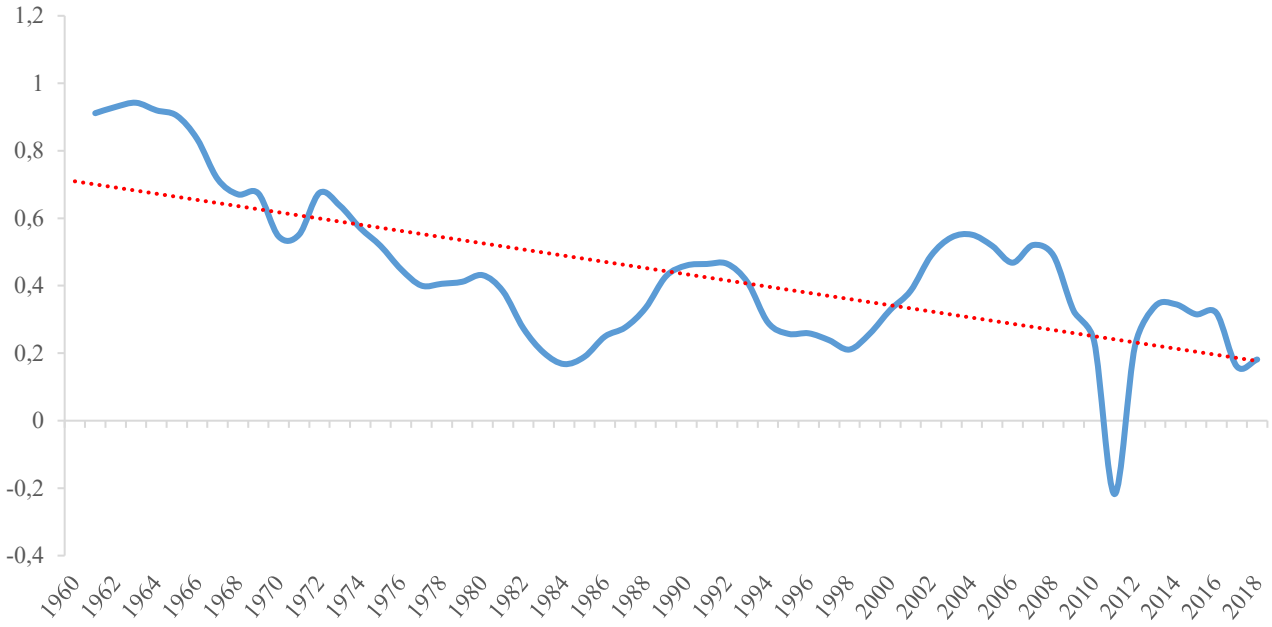
Source: World Bank, World Development Indicators (2019). Households and NPISHs final consumption expenditure (% of GDP).

When considering whether the euro area might be suffering from secular stagnation, at least the main characteristics of the condition seem to exist in the monetary union. The natural rate of interest has been low for years, GDP growth is stagnant, and the outlook shows a similar pattern. Inflation is also expected to follow its path of below-target rates, household saving is increasing and spending decreasing. Majority of these trends have been ongoing for decades, as well as are the reasons behind them.

5.3. A slowdown in population growth

Supporting the reasons behind secular stagnation condition, there is evidence of decreasing population growth in the Euro area. According to the World Bank's latest data (2019), there has been a declining trend in population growth since 1960 (Figure 11). The population growth in the whole world is decreasing even further in the next decades, and some sources say it might reach its peak and start falling by the end of the 21st century (The Economist, 2019). This is most likely due to girls' education, which is still in progress in developing countries, such as Nigeria or other Central African countries, and is likely to cause a decrease in global fertility. In Europe, on the other hand, the education equality between genders has been saturated for decades, which plays a role in declining birth rate trend and prospects in the euro area (The United Nations, 2019).

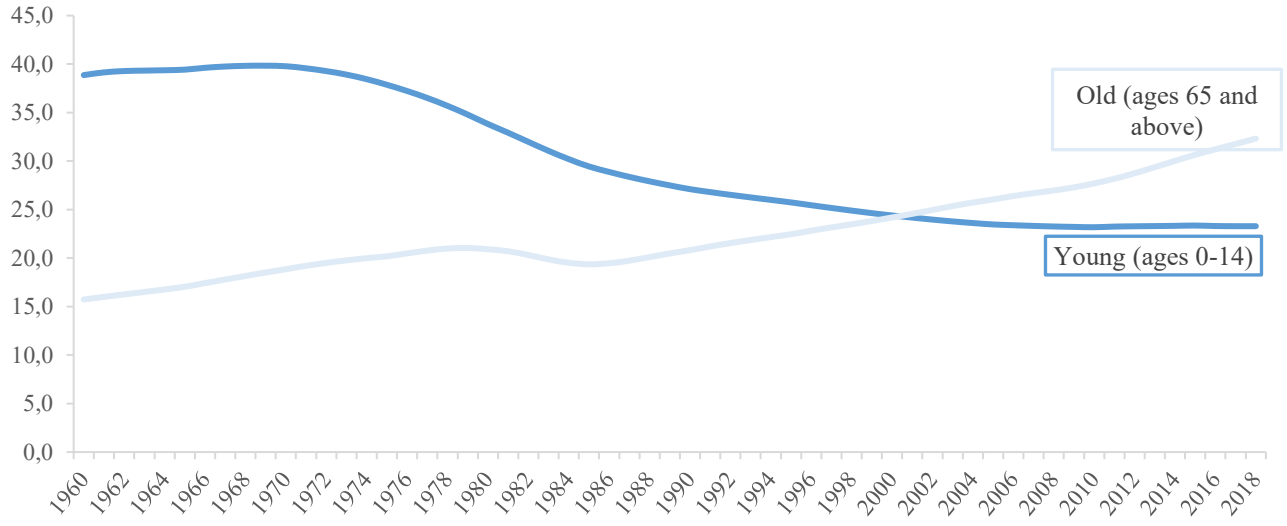
Figure 11: Euro area population growth (annual percentage)



Source: World Bank, World Development Indicators (2019). Population growth (annual %).

Another proof of the changing demographics in the euro area can be seen in the development of the young population compared to the working-aged (ages 15-64). Along with the decreasing birth rate, the life expectancy has risen (Figure 13) expanding the ratio of over 65-year-olds compared to the working-age population above the ratio of 0-14-year-olds (Figure 12). These two lines encountered already in 2001, after which the population of old has only grown larger, whereas the number of children remains approximately unchanged (The United Nations, 2019). This has a huge impact on increasing savings in the economy as well as labour market: a decrease in the population growth and birth rate illustrated in Figures 12 and 13 imply that there are fewer people to hire in the future. Since the slowdown in population growth started already in the 1960s, the working-age population today is a lot smaller than it was a few decades ago.

Figure 12: Euro area age dependency ratio (percentage of working-age population)

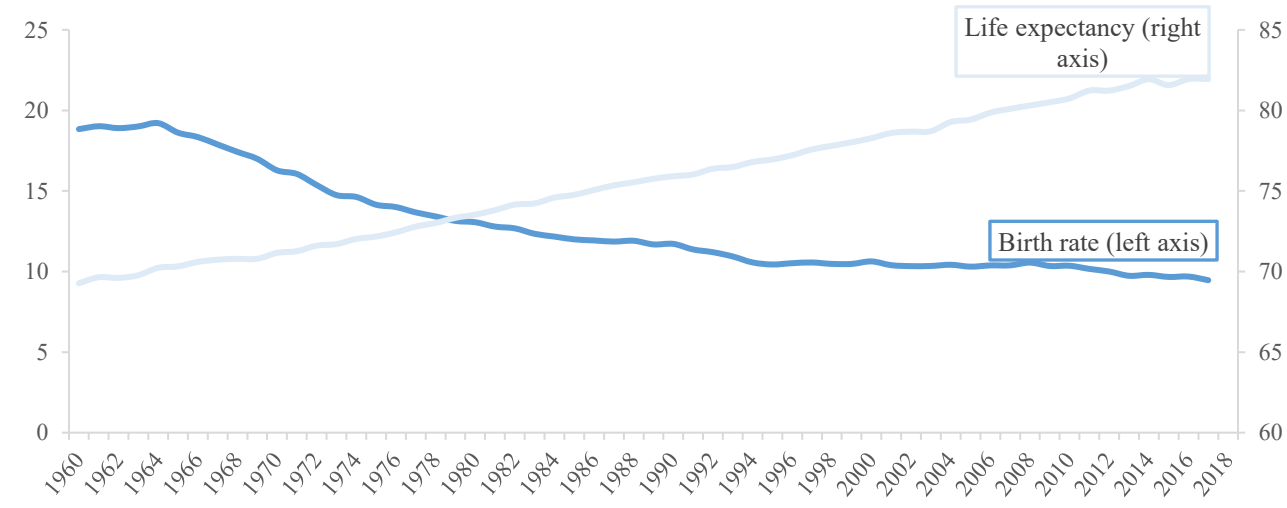


Source: World Bank, World Development Indicators (2019).

Age dependency ratio, old (% of working-age population) & Age dependency ratio, young (% of working-age population).

Increasing longevity (Figure 13, right axis) has a negative impact on economic growth when starting from a high level (Kelley and Schmidt, 2005). This is the case in Europe, where economies are well developed, and GDP per capita levels are relatively high. Therefore, it is justified to argue that increased life expectancy, especially in the euro area, has affected the monetary union's economic growth negatively: as formalized in section 2, increased life expectancy increases the savings rate in the economy.

Figure 13: Euro area birth rate (per 1,000 people) and life expectancy at birth (total years)



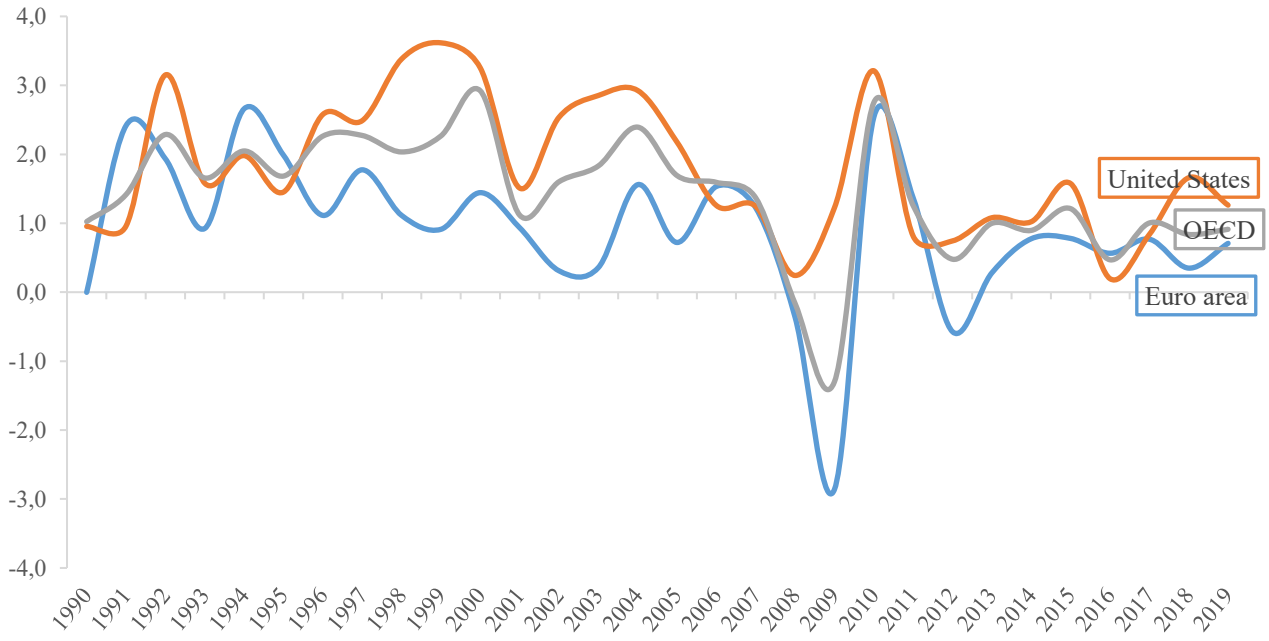
Source: World Bank, World Development Indicators (2019).

Birth rate, crude (per 1,000 people) & Life expectancy at birth, total (years).

5.4. A fall in productivity growth

As seen in the data below (Figure 14), the euro area has faced lagging productivity growth compared to other advanced economies. Measured by output per person employed, the after-crisis performance has been weak both by historical and international standards. The weak productivity performance isn't only due to global economic conditions, but the trend has been ongoing well before the recent global slowdown: from the early 1990s, the euro area has been one of the slowest growing regions in terms of labour productivity (European Central Bank, 2017). Although there have been some positive signs in the productivity growth in the past few years, these levels are still not on the pre-crisis path, not to mention the levels of the United States or the OECD members.

Figure 14: Euro area labour productivity growth (per person employed, annual percentage)



Source: The Conference Board Total Economy Database™ (Adjusted version) (Apr 2019). Growth of labor productivity per person employed, % change.

In historical context, one might expect that a shift towards services-focused economy would be the natural force pushing productivity growth rates down, as service sectors have typically had lower productivity growth than for example industrial ones. However, according to the ECB Bulletin article (2017), the decline in productivity growth in the euro area has been mainly caused by a market slowdown across all sectors, rather than compositional effects. This observation is well in line with the observed secular decline in economic growth and decreased household spending.

Of course, the 2008 financial crisis plays a significant role in the productivity growth fall globally as well as in the euro area. The weakening of domestic demand and investment may have limited technological innovations and slowed down the expansion of small and young, but productive, firms (European Central Bank, 2017). Productivity growth is expected to remain moderate across the world, and in the euro area, large economies such as Italy and Spain are weighting the development down even more. In 2018, productivity gaps in these countries were up to – 25 % compared to the US (The Conference Board, 2019). Furthermore, if households continue to have low expectations about future productivity growth, it increases saving in the economy, which in turn puts downward pressure on the real interest rates.

5.5. Rising inequality

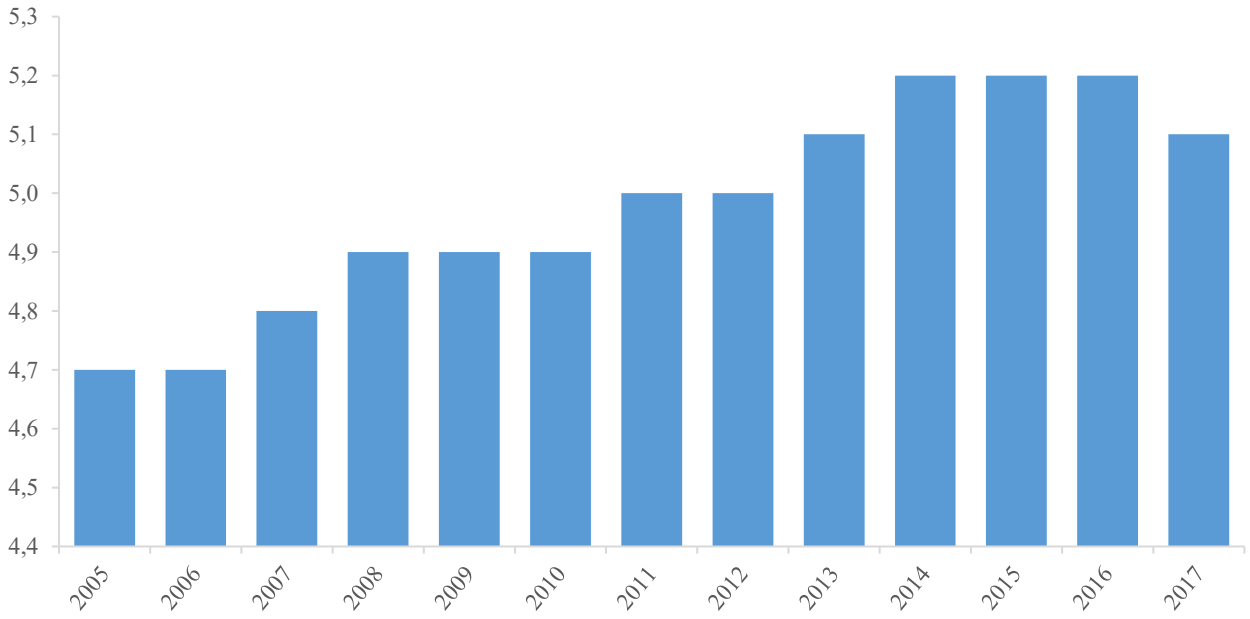
In 2014, a French economist Thomas Piketty proposed an argument that the decreasing economic growth was the reason behind growing income inequality in the euro area (Jackson, 2019). Piketty argued that under rising economic growth conditions, the richest would consume more and the wealth would flow back to the society. Accordingly, the poor would find employment easier, causing the labour productivity to increase, production costs to decline and wages to rise. In fact, between 1946 and 1980, the poorest were the ones to gain the highest income growth, and the inequality was declining.

After 1980, the income share gap started widening. Decreasing labour productivity growth might have affected the wage increases negatively, which affects especially the low-income part of the population. Also, new technology firms accrue a larger share of capital, at the same time operating with less and less labour force – following a rising share of income held by the high-tech companies and their owners. (Jackson, 2019).

In the euro area, income inequality has had an increasing trend over ten years, as can be seen from Figure 15. From 2005 to 2016, the share of disposable income received by the wealthiest 20% compared to that received by the deprived 20 % rose from 4.7 % to 5.2 %. The same trend has been in other advanced economies as well. Globalization, labour force mobility and migration are proposed to increase the number of low-skilled workers inside Europe, and as the new technologies have been increasing the demand for skills, a growing share of labour force falls to the low-income share of the population. Consequently, high-tech companies in developed countries tend to outsource their production in cheap labour cost countries, which widens the domestic equality gap further.

Beneficiaries are the educated workers performing abstract tasks, while low-skilled workers performing manual tasks are losing.

Figure 15: Euro area income quintile share ratio (S80/S20) *



*The ratio of total disposable income received by the 20 % of the population with the highest income to that received by the 20 % of the population with the lowest income.

Source: Eurostat (2019). S80/S20 income quintile share ratio by sex and selected age group - EU-SILC and ECHP surveys.

Considering the euro area as one region, the inequality problem is larger than within one country, as it exists also between countries. Latvia, for example, is suffering from an average wage of three times lower than the hourly wage across the EU. Therefore, young Latvians seem to seek for better jobs through migration leaving Latvian labour market less competitive. Countries receiving labour force immigrants win compared to those losing them (Eurofound, 2017). Also, there is a difference whether inequality is measured by pre-tax income or after-tax income. After-tax income inequality is smaller in the euro area since progressive taxation is popular across the monetary union member states.

Although inequality has slightly increased in the euro area since the 1980s, it is still in good condition compared to the US: European social models providing relatively equal access to education, health care, and social security function better than the ones in the US. Also, European countries have succeeded better in increasing the bottom earners' income. Political decisions play a large role in rising inequality risk, and some countries have reduced their top marginal income tax rates as well as

corporate tax rates. (Blanchet, Chancel and Gethin, 2019). This could be a start of growing inequality if the politicians are not careful. However, it is quite safe to say that when it comes to secular stagnation in the euro area, rising income inequality is not affecting as much as other factors.

6. Conclusions

Considering the proposed evidence above, it is certainly rational to say that the euro area is in a prolonged period of stagnated growth and low interest rates. The OLG-model shows that the factors behind secular stagnation are most likely fundamental and that demographic structure is affecting the aggregate demand, which is pushing the interest rates down. These factors and trendline developments are easy to catch looking at the euro area data from past decades, and that is why it is justified to say that there might be a condition of secular stagnation in the euro area.

Although an optimist might say that there have been several upswings in recent history or that last two years have shown signs of recovery, it does not rule out the fact that the declining trend in economic growth and interest rate have been ongoing for decades. First, secular stagnation does not rule out the possibility of upswings or expansions – on the contrary, it is likely to fuel expansions to bubbles, since ultra-low interest rates encourage risk-taking and search for yield. Second, the recent recovery of the euro area economy is mostly thanks to extremely abnormal monetary policy decisions, and it is unlikely to the economy to remain self-sustained if the ECB were to normalize its monetary policy. For these reasons, it might be difficult to spot the signs of weakening growth or to admit that economic growth is not an infinite phenomenon. The era of economic growth might indeed be at the end of its road in the euro area as well, and the environment of negative interest rates and stagnant growth might be our new future.

However, it is controversial whether the secular stagnation really exists, since economic growth is not at zero-levels. The economy is growing still, although not at the same pace as it used to. When it comes to the fears of the euro area facing “Japanization”, our situation does not look as bad as in the island country: Japan has experienced a long period of deflation, whereas the euro area still enjoys inflation rates quite near the target. Also, if we are in the secular stagnation condition, it does not mean that we will stay there forever. Secular stagnation is only a long period which might very well end and turn towards a healthier situation.

Whether this situation turns out good or bad for the monetary union, there is no question that this last decade has been very unconventional. Due to the controversial definition of the secular stagnation

hypothesis, we might never be totally certain that such period even existed. The global economy might dive into an even deeper recession, and this period of at least moderate economic growth will be looked back longing. On the other hand, we might find ourselves in a situation where Lawrence Summers' prediction indeed came true, and this extraordinary period we now call the "secular stagnation" is actually the new normal.

7. Suggestions

Even if it were true that the euro area is indeed in a secular stagnation condition, that does not necessarily mean that there is nothing we can do. In fact, what the ECB could do is increase its inflation target to accommodate the negative natural rate of interest: in an environment of negative natural rate of interest, even unconventional monetary policy measures are not feasible. In such situation, raising the inflation target would bypass the nominal zero lower bound by reducing the inflation-adjusted rates (Bunker, 2018). This would improve macroeconomic performance and bring output closer to its potential (Dorich, Labelle, Lepetyuk & Mendes, 2017).

One solution is suggested to be getting rid of cash. If the zero lower bound exists because people start using cash in a negative interest rate environment, then, abandoning cash and, for example, moving completely into cryptocurrencies would overcome the zero lower bound problem. People would no longer have the opportunity to hoard cash, and the ECB would have no constraints on lowering its policy rates.

Yet, fiscal policy changes would have the greatest effect. Simulative fiscal policy, i.e. increasing budget deficits, would increase demand for loans, and thus increase the natural rate of interest. Eggertsson, Mehrotra and Robbins (2019) suggest that the government debt could be directed to the young to stimulate spending. Also, acts to improve unemployment insurance would help narrow the income inequality gap. However, in the euro area, actions of one country would not help the whole monetary union. Wider, more coherent actions are needed to boost the economic region.

Even though these suggestions might be good in theory, they are still very inconvenient and hard to implement. If it were possible to move into using cryptocurrencies just like that, central banks would have done it ages ago. For now, the best way of fighting against secular stagnation seems to be very excessive monetary policy and longer-term monetary easing, which the European Central Bank has practiced for several years. Although the outlook for the euro area does not look bright, the ECB is doing everything in its power to save the economy from falling even deeper.

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